we now know it disposes it to a more speedy Coagulation only by reducing the force of the blood vessels.

It would seem from all these facts, that as the lip the blood is acted upon by the blood vessels, the more it loses of its animalized State, and the sooner it descends down to a level with dead or non animalized matter, such parts as are the earliest as Gellies which coagulate as soon as they are deprived of their heat, or exposed to the Cool Air: But the more the blood vessels act upon it, within a Certain Degree called Synocha Action, the slower the blood coagulates, and that in Consequence of the Animal

qualities it acquires by the stimulus of the blood vessels resisting the influence of the cool air upon it. The blood in this respect is upon a footing with the whole body which resists the effects of cold air, in proportion as it is excited by motion, or cordial aliments or drinks. It is agreeable to observe the same vital or reciprocal intercourse between the blood vessels, & the blood that takes place between the heart and brain. They both mutually stimulate each other into life & health, & they both die from the cessation or abstraction of each other's stimulus. The fibrine or lymph of the blood is dissolved as certainly from the feebleness

7

or absence of action, as from an excess of it. This has been frequently observed in the Prostrate State of malignant, and in the Survey & in the low state of typhus fevers, and in the Tetanus. In the last disease, the Arteries become weak from the translation of this excitement to the muscles & tendons.

The fibrin, or coagulating lymph of the blood is supposed to be the exclusive seat of its Vitality, or what I have called its Capacity of life. The facts & arguments upon which this opinion is founded are as follow.

1 Fibrin when found in the Arteries after death, or when thoroughly deprived of its serum by Absorption or otherwise, discovers evident marks of a fibrous structure.

2 Fibrin discovers motion when subjec-
-ted to galvanic influence similar ~~to that~~
which is observed in a muscle.

3 M. Poiseuille discovered contraction, and
dilatation in the fibrin analogous to the
same actions in a muscle, in a false
Aneurism in a person at Lyons, and
on a part where there was no artery
large enough to produce a sensible pulsation.
M. Dumas who relates this fact in his
physiology asks immediately afterwards,
whether the pulsation of the arteries
may not be assisted by the alternate
contraction and dilatation of the lymph
of the blood? ——

4 The Coagulation of the blood is ac-
-celerated, and retarded by all the

20

Causes which increase, retard, or destroy the Contraction of the muscles.

It coagulates slowly in proportion to the muscular texture it acquires by being acted upon by a certain grade of Stimulus in the blood vessels

There are three different forms assumed by the coagulating lymph according to the different grades of Arterial Action upon it. 1 The appearance of a relaxed muscle, or dead flesh. This is produced by a moderate degree of Action which takes place in pleurisy & Rheumatism. 2 The appearance of a Contracted muscle, or a cupped appearance. This is produced by a higher degree of Synochia Action.

3 membrane which is pervaded by nerves and blood vessels. This is produced by a ~~little higher grade of~~ Synocha action, ~~and that pervades~~ protracted for a considerable time. This membrane occurs only in the Synocha, or what is called the open inflamatory State of fever. I have carefully examined Intestines with a reference to this Subject Dissections of persons who have died with malignant fevers in which we know the ~~with a deficience to~~ ~~this subject,~~ blood to be so much ~~too~~ so little stimulated as to lose its co-agulating power, and found but one instance of a membrane or completely organized flesh being found in any part of the body, and that was probably

I produced by the fever being Synocha, that is openly inflammatory in its first or last Stage.

I said a little while ago that blood exhibited a buffy coat when drawn in pregnancy. This is the effect of an inflammatory action imparted to the blood vessels by the stimulus of the diseased Uterus. This inflam^d action is wisely intended I believe to increase the quantity of fibrin in the blood for the purpose of nourishing the fœtus in Utero, ~~for~~ fibrin is the basis of animal matter and of course ~~is the~~ constitutes animal nourishment. From this, it would seem that the human body is not only conceived and brought forth in

disease, but that the matter from which it ~~is formed~~ derives its growth in the wound is the product of a disease, that is of an inflammatory action in the blood vessels.

5 I infer that the fibrin is the seat of ~~what is called~~ its vitality in the blood from the following ~~circumstance~~ circumstance of blood in which there appeared no buff, or fibrin, and much more than the serum of the blood. This has been ascertained by an experiment made by Sir John Pringle, and related in his Appendix to his treatise upon the diseases of the British Army. This experiment was repeated at my request by Mr Thornton in the Ramsay hospital

to, and ~~with~~ alitth circumstances which added additional support to the doctrine I am now delivering. The took a portion of the buff of the blood of a person in an inflam$^{d}$ fever, and an equal portion of the ~~buff~~ fibrin of the blood of a person in good health, and exposed them both to the same degree of heat in similar situations. The former putrefied sooner than the latter. This experiment was repeated, and with a similar result. The more speedy putrefaction of the buff of the blood in an inflam$^{d}$ fever was occasioned by its being more animalized by the stimulus of disease. Thus you see life is exerted in the ~~this~~ a part

of the fluids of the body, as well as in all the solids, by means of stimulus. As the stimulus of disease increases the quantity and force of life in the solids, so it does in the fibrin of the blood.

Again - we observe the stimulus of disease to produce not only sensibility in parts devoid of it in health, but irritability or contractility - as in the bones and tendons. We observe it to have the same effect upon the fibrin of the blood. It imparts to contractility to it when it is coagulated, and sensibility to it when it is converted into membrane.

From these facts I have been led to consider the fibrin of the blood like the bones and tendons as animalized

11 only in their natural or healthy states,
and that they become animated, that
is acquire sensibility & contractility
only by the additional stimulus of
disease. —

6ly and lastly. The sudden death induced
by the poison of the Vipers seems to
depend upon the sudden extinction
of the animalization qualities of
the fibrin of the blood. It does so
how ever only it come in contact with
the blood. From the suddenness with
with which death is produced, it would
seem that the whole fibrin of the
blood is a homogeneous mass, or in
other words, one great animalized

muscle. Every part of it dies from an impression made upon a ~~single~~ small part of it by what I have called the Sympathy of Continuity.

From the history that has been given of the ~~blood~~ effects which Stimuli induce upon the fibrin of the blood, a new nomenclature seems necessary to designate the Changes which are produced upon it. Its Dissolution ~~Death~~ ~~be called its apparent Death~~ whether by an excess or abstraction of Stimulus should be called Apparent Death. When it is restored to its natural consistency, by means of bleeding or Stimulants it should be said to be resuscitated.

I have said membrane is produced

from the fibrin of the blood. It oc-
=curs more frequently after pneumony
and Cynanche trachialis than after
any other forms of inflammatory
fevers. The lungs are made to adhere to the pleura,
& it, and the wind pipe is obstructed
by it. Besides membrane, polypi,
Schirsi and the basis of Calculi and
pus are formed from it.

The last remark I shall make
upon it, is only to repeat that it is
=ment of the body. It is admirably fitted
the basis of the nourish-
for this purpose, being of a very nutritious nature.
One reason why blood was forbidden as
aliment to the Jews, was because it conveyed nourishm-
into the body that did not from its quantity
animate with the heat of
the Climate inhabited by them.

dissolved in it. These are
V ~~Nutrients~~ albumen - gelatin Salt
Soda - Sulphur, & some neutral salts. The
Albumen is obtained by coagulating it
by means of heat. It contains like-
-wise some Lymph dissolved in it in
which case

~~any other part of an animal~~

by

II: We proceed next to say a few words upon the Serum of the blood. It is water with several ~~[illegible]~~ matters, ~~[illegible]~~ ~~[illegible]~~ ~~[illegible]~~ it has been called Serosity by Mr. Senac. Serum of the blood constitutes the gravy of animal food, which when obtained by itself affords a light, and pleasant article of food for invalids. It tinges the Syrups of violets of a green color. By a chemical analysis it yields Albumen, Gelatin, Sulphur - Carbonate of Soda - muriate of Soda - phosphorate of Soda, and phosphorate of ~~tissue~~ lime. The uses are to furnish those fluids which are

necessary in the different cells & cavities of the body such as the Ventricles of the brain, and pericardium, and to dispose and convey out of the body all saline and improper matter. It is the excess and stagnation of this part of the blood that constitutes local, and general Dropsies. —

III The red Globules of the blood come next under our notice. Many disputes have existed about their form. The latest Observations prove, they are not quite globular. I ~~have seen~~ saw them distinctly in the year 1769 thro' Mr. Hewsons Microscope floating in the

in the Serum of some blood, in which they exhibited an appearance resembling in their figure a Holland Cream Cheese. They are larger in a Skate, and less in an Ox than in man. The diameter of a single Globule is computed by Mr. Bell to be less than $\frac{1}{3000}$ part of an inch. [They are of a more florid color in the veins than in the arteries]. When dry they are highly inflammable, from which it has been supposed they are of an oily nature. That this is not the case I infer from the lymph when dry, being equally inflammable, and yet we know it does not contain a particle of Oil in it. The ~~red~~ color of the Globules is derived from the action of the Oxygen

14 of the Air upon them. we infer this
to be the case from its encreasing the
red Color of the blood out of the body, &
from the blood losing its red Color when
Depriv'd of the Air. This is evident from
the Dark Color of the blood which falls
to the bottom of a bowl. The Oxygen of
the Air Dr Priestley has taught us ~~im~~
encreases the red Color of the blood even
when it is confined in a bladder. That
the Oxygen of the Air is the Cause of the
red Color of the blood is obvious from its
imparting the same Color to lead, and to
the Sulphate of Iron when subjected to
Calcination. The red Color which we
observe in hams that have been
preserved by Salt petre is derived from

the oxygen contained in that salt.

The Dark color which is observed in blood that has stagnated in any part of the body, and which is sometimes perceived in the face in certain dis=eases of the lungs is occasioned by the incomplete oxygenation of the blood.

I have said the red globules are not the most essential part of the blood. As a proof of this, we see perfect life in insects without them. We see moreover life recovering from diseases in which there are scarcely any of them in the blood vessels to give the blood a red color. Dr Stubbe relates that the poor people in Barbadoes many years ago drank a liquor called mobby made of potatoes fermented with water which

15 deprived their blood of its red color, & hence it became common to call very pale people in that island "Croaby faces".

Good health is connected with a due quantity of red globules in the blood vessels. Their healthy presence is known by a red color in the lips & cheeks. Their excess is known by a highly florid color of the face.

Their use is said to be to keep the Lymph in a fluid state by being diffused thro it, to give tone to the blood vessels & to furnish a substance capable of decomposing the oxygen of the air in order to obtain from it, that portion of heat which is generated in the lungs.

They sometimes like the lymph,

V But it sometimes exists in it in an elastic state

a striking proof of which occurred in our hospital in the month of April 1811. Upon opening a Vein in the Arm of a man whose skull was fractured. the blood ispued in a full stream for a while, and then suddenly stopped. This stoppage was followed with a hissing noise like the discharge of Air from a porter bottle. It was distinctly heard not only by Mr Lowry the apothy of the hospital who opened the vein, but by the Servants of the hospital who held the bowl that received the blood. After continuing for about 1/4 of a minute, it suddenly stopped, upon which blood again ispued in a full stream from the Vein. —

Cases like us that Air has sometimes been found in the Corps employed in dry anatomy

and Serum, become the cause of diseases, by forcing their way into remote vessels, and thereby inducing inflammation — by bursting small vessels, and thereby producing hemorrhages, and by stagnating in lax parts, and thereby bringing on Congestions and Obstructions.

Many substances have been supposed to enter into the composition of the blood besides those which have been mentioned. It is certain it contains some air in a semielastic state. This air sometimes often stagnates in parts of the body and is secreted and poured forth from the lungs in certain Diseases. But of this I shall say more in our pathology.

There is a happy peculiarity in

the blood which defends it from being injured by the mixture of bile, or an undue proportion of salts with it. This is not however the case with matters of a putrid nature. They are speedily thrown from it by the channels of the liver, the kidneys & the bowels. I before mentioned its aptitude to be destroyed by ~~bile~~ coming in contact with the smallest portion of the poison of the viper.

The quantity of blood in a man of ordinary size is five & twenty pounds.

We have noticed the use of each of the component parts of the blood. It remains that I mention the uses of the whole mass. They are to impart a

portion of that life to the body which it derives from Chemuli - to impart ~~communicate~~ sensibility to the nerves by giving tone to this contiguous blood vessels, ~~&~~ to afford a fluid from which all the Secretions of the body are derived and perhaps to circulate and convey Oxygen to the muscles & nerves as the means of sensibility & irritability. How various & wonderful are its properties & uses! It was after a Survey of both probably that moses declared the life of every animal to be in its blood.

By a Chemical Analysis, the blood has been found to yield the following matters - Water - fibrin, - Albumen, Gelatin, - Hydrosulphurate of Ammonia, Soda, Subphosphorate of Iron, - Muriate of Soda, phosphate of Soda, and phosphate of lime. —

Gelatin exists in animals of the

17 lowest order. In is in a thin and
limpid states in the Zoophytes – it is of
~~a~~ a thicker consistence in insects;
It is combined with albumen in crusta-
-ceous animals and Worms. It is
combined with albumen & fibrin in
certain reptiles and in fishes, but it
exists in the greatest perfection and com-
-bined with the greatest quantity of
albumen and fibrin, in birds & the quadrupeds. & the human
species. The gelatin is
formed first, in the production of animal
matter, out of which are formed albu-
-men & fibrin in the order in which
they have been mentioned. ——